

WHAT IS CLAIMED IS:

- 1 1. A glow plug for an internal combustion engine, comprising:
2 a cylindrical plug case having a rearward-facing sealing face formed on
3 an inner surface thereof;
4 a plug body held in the plug case, the plug body including:
5 a cylindrical housing having a sealing portion engaged onto the sealing
6 face of the plug case to form an airtight seal between the plug case and the
7 housing;
8 a sheath having a rear end portion airtightly fixed in a front end portion
9 of the housing;
10 a heater disposed in the sheath and generating heat upon energization
11 thereof; and
12 a center electrode disposed in the housing and having a rear end portion
13 thereof projecting from the housing, the center electrode being electrically
14 connected with the heater and mechanically connected with at least one of the
15 housing, the sheath and the heater so as to become axially displaced in response to
16 variations in engine combustion pressure; and
17 a combustion pressure sensor arranged between a rear end portion of the
18 plug case and the rear end portion of the center electrode and having a
19 pressure-sensitive element that converts an axial displacement of the center
20 electrode into an electrical signal for detection of the variations in engine
21 combustion pressure.
- 1 2. A glow plug according to Claim 1,
2 the plug case having an inward protrusion protruding radially inwardly
3 from the rear end portion of the plug case;
4 the center electrode having an outward protrusion protruding radially
5 outwardly from the rear end portion of the center electrode; and
6 the pressure-sensitive element being placed between a front surface of the
7 inward protrusion and a rear surface of the outward protrusion.

1 3. A glow plug according to Claim 1,
2 the sealing face of the plug case tapering toward to a front end of the plug
3 case;
4 the sealing portion of the housing having a sealing face tapering toward a
5 front end of the housing and being engaged with the sealing face of the plug case;
6 and
7 the glow plug further comprising a seal member held between the sealing
8 face of the plug case and the sealing face of the housing.

1 4. A glow plug according to Claim 1, wherein the sealing portion is formed
2 at a front end of the housing.

1 5. A glow plug according to Claim 1,
2 the heater being a ceramic heater;
3 the center electrode being mechanically connected with the housing so as
4 to become axially displaced together with the housing; and
5 the glow plug further comprising an insulating member to provide an
6 electrical insulation between the center electrode and the housing.

1 6. A glow plug according to Claim 1, wherein the pressure-sensitive
2 element is ring-shaped and has an inner diameter smaller than that of the plug case.

1 7. A glow plug for an internal combustion engine, comprising:
2 an outer plug housing having a first sealing face formed on an inner
3 surface thereof;
4 an inner plug housing held in the outer plug housing and having a second
5 sealing face engaged with the first sealing face to form an airtight seal between
6 the inner and outer plug housings;
7 a center electrode disposed in the inner plug housing and having a rear
8 end portion projecting from a rear end of the inner plug housing and a radially

9 outward protrusion formed on an outer surface of the rear end portion, the center
10 electrode being under compressive stress to press the protrusion against the rear
11 end of the housing;

12 an insulating member interposed between the rear end of the housing and
13 the protrusion of the center electrode to keep the housing and the center electrode
14 insulated from each other;

15 a sheath having a rear end portion airtightly fixed in the inner plug
16 housing and a front end portion to be located in a combustion chamber of the
17 engine so as to receive combustion pressure;

18 a heater disposed in the sheath and electrically connected with the center
19 electrode; and

20 a combustion pressure sensor arranged between the rear end portion of
21 the outer plug housing and the rear end portion of the center electrode and having
22 a pressure-sensitive element that generates an electrical signal in response to
23 variations in the combustion pressure.

1 8. A glow plug according to Claim 7,

2 the outer plug housing having an inward protrusion protruding radially
3 inwardly from the rear end portion of the outer plug housing;

4 the center electrode having a second radially outward protrusion formed
5 on the rear end portion of the center electrode; and

6 the pressure-sensitive element being placed between a front surface of the
7 inward protrusion and a rear surface of the second outward protrusion.

1 9. A glow plug according to Claim 8, wherein the first mentioned outward
2 protrusion is located in a front side of the second outward protrusion.

1 10. A glow plug according to Claim 7,

2 the combustion pressure sensor further including an output electrode
3 having a portion projecting radially outwardly from the outer plug housing, and

4 the glow plug further comprising:

5 a lead having a front portion connected to the projecting portion of the
6 output electrode and extending axially rearwardly; and
7 a protective cover covering therein the rear end portion of the outer plug
8 housing, the projecting portion of the output electrode and the front portion of the
9 lead and having an open rear end through which the lead extends externally of the
10 protective cover.